

**What is claimed is:**

1. A method for producing a silicon-on-insulator structure including hydrogen implantation in silicon wafer, chemical treatment of silicon wafer and substrate, joining of silicon wafer and substrate, splicing and splitting of wafer along the implanted layer characterized in that a drying, removing of the of physically adsorbed substances from the surfaces of the wafers after chemical treatment is carried out in the low vacuum conditions at the moderate temperatures at which the implanted hydrogen is staying in the in the bound state and joining the wafer and substrate, their splicing and exfoliating hydrogen induced transferring along the implanted layer in the wafer in the same low vacuum conditions at the same or slightly higher moderate temperatures at which the implanted hydrogen is staying mostly in the bound state.
2. The method according to claim1, characterized in that the hydrogen implantation is carried out through thermally grown oxide  $\text{SiO}_2$  with the thickness 5 to 50 nm and following it is removed after implantation.
3. The method according to claim 1, characterized in that the hydrogen implantation is carried out with  $\text{H}^+_2$  or  $\text{H}^+$  ions with doses  $(1.5 \text{ to } 15) \times 10^{16} \text{ cm}^{-2}$  and energies 20 to 200 keV, respectively.
4. The method according to claim 1, characterized in that a thermal annealing is carried out at  $1100^\circ \text{C}$  during 0.5 to 1 hour after splitting.
5. The method according to claim 1, characterized in that a touch chemical-mechanical polishing (CMP) or thermal oxidation with following chemical etching in diluted hydrofluoric acid are carried out for removing of upper rough layer on the surface of exfoliated silicon film.
6. The method according to claim1, characterized in that the thickness of thermally grown oxide  $\text{SiO}_2$  with on the substrate is equal to 0.01 to 3  $\mu\text{m}$ .
7. The method according to claim 1, characterized in that the substrate is a glass wafer with the thickness about 500  $\mu\text{m}$ .
8. The method according to claim 1, characterized in that the substrate is a quartz wafer with thickness about 500  $\mu\text{m}$ .

9. The method according to claim 1, characterized in that the drying, removing of the of physically adsorbed substances from the surfaces of the wafer and substrate, joining the wafer and substrate, their splicing and exfoliating along the implanted layer in the wafer at the temperatures 80 to 350°C with duration from 0.1 to 100 hours are carried out in the low vacuum conditions ( $10^1$  to  $10^4$  Pa).